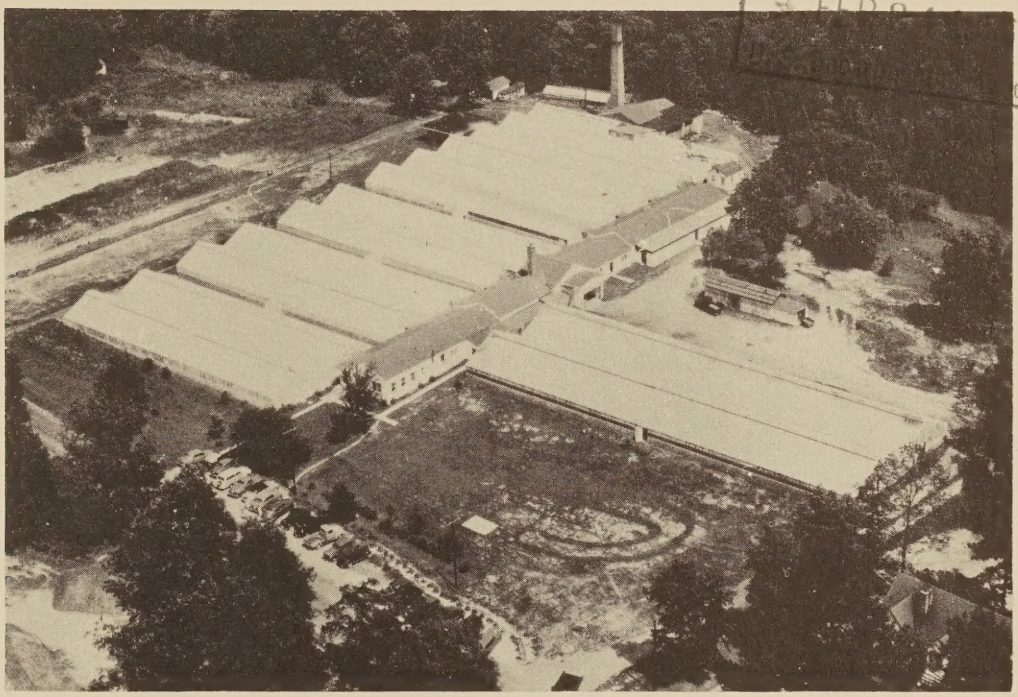
ORCHID CULTURE



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Rivermont
ORCHIDS
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In this discussion we answer a few basic questions about orchid culture by briefly discussing the most important factors of the environment that influence the growth of orchids. Since climatic conditions vary a great deal from place to place and at different times of the year, specific instructions are inadvisable. Rather, it would profit the grower to gain an idea of how various factors affect plant growth and how they are related to each other. Thus, he will be able to act intelligently, to analyze any problem that may arise, or to interpret any recommendation as they apply to his own situation.

Repotting is specifically described to serve as a guide for beginners.

Reference may be made to some of the fine books on orchid culture listed in our bibliography.

WATER

Water is used by plants in the manufacture of plant food, in transporting the food to various parts of the plant, and to keep the plant erect by making the cells turgid. One can very well imagine what would hapen if a condition of water deficiency should occur. The cell walls would lose their rigidity, leaves and pseudobulbs would become shriveled, and the manufacture and transport of food would cease. Growth and development would be slowed down considerably and eventually cease.

Roses, chrysanthemums and many other garden plants wilt as soon as water becomes unavailable. With Cattleyas, on the other hand, the effect of insufficient water is not immediately obvious, although internal changes may have occurred. The effect of lack of water is not immediately shown by the succulent and much-thickened pseudobulbs and leaves. Drying the osmundine thoroughly between applications of water could actually be harmful to the growth of Cattleyas.

Most of the water loss from plants is lost through transpiration. Transpiration simply means the loss of water from plant tissues in the form of water vapor. In determining the frequency of watering, the factors affecting transpiration should be considered. These are discussed in the following pages.

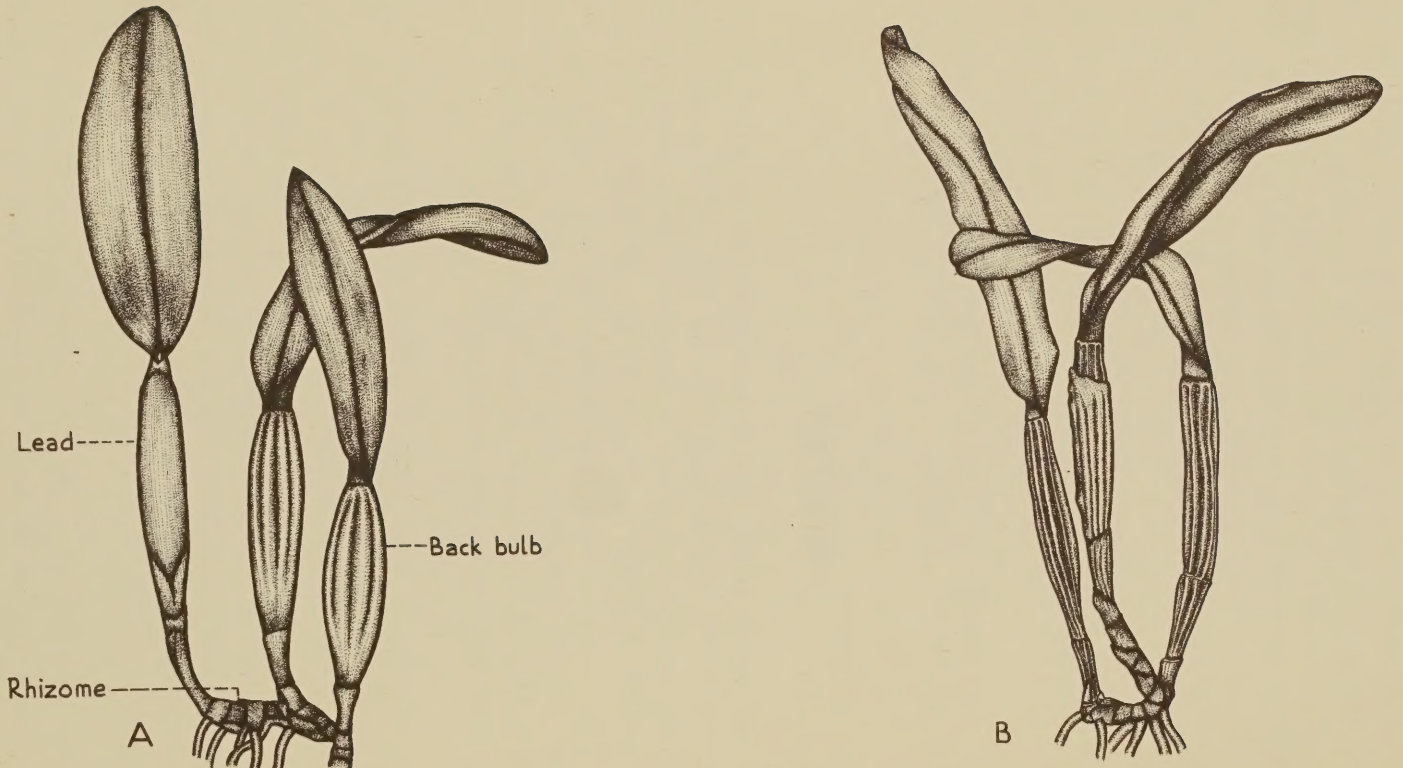

Fig. 1.

A. Cattleya plant with hard, turgid pseudobulbs and leaves.
B. Cattleya plant with weak, shrivelled and soft pseudobulbs and leaves.

TEMPERATURE AND LIGHT INTENSITY

IN RELATION TO TRANSPIRATION. Excessive light intensity raises the temperature of the plants thus increasing the loss of water from the leaves. If the rate of water loss is faster than the rate of water intake through the roots, the plant will wilt. We see here the danger of drying plants between waterings especially under conditions of high light intensity.

When the sun is shining on the leaf, the leaf temperature is raised above that of the surrounding air and plants lose water to the atmosphere even when it is saturated with moisture (100% relative humidity). This is a proven and accepted fact. Obviously, the best way to cut the excessive loss of water from the plant is to cool the leaves and the house so that there would not be much difference between their temperatures. One way of doing this is to increase humidity by spraying water over the plants, the walks and benches. It has been found, however, that increasing the humidity in this manner cools the house for less than 30 minutes. The effect is so temporary since the water on the leaf surfaces soon evaporates and the atmosphere itself gets dry again, especially when there is good air circulation. Furthermore, so long as the leaf receives light, its temperature will always be higher than that of the surrounding air and hence, the plant will continue to lose water regardless of humidity.

Shading prevents the sun's rays from striking the leaf and cools the house, reducing the difference between the leaf and the house temperatures throughout the day. Shading, therefore, is a more effective way of reducing water loss than increasing humidity.

Spraying water is not only ineffective but a good way of spreading diseases. High humidity and high temperature together create a condition that is ideal for the growth of many destructive fungi and bacteria.

IN RELATION TO GROWTH. Within certain limits and providing other factors as water, light, etc., are sufficient, a rise in temperature usually increases food production, respiration and rate of growth.

The energy necessary for growth is given off in respiration, a process which uses the food manufactured by the plant. If little food is available, it is used up in a short time and growth ceases. This situation is aggravated by low light and high temperature. A plant may not grow at 40° F. because of the very low rate of

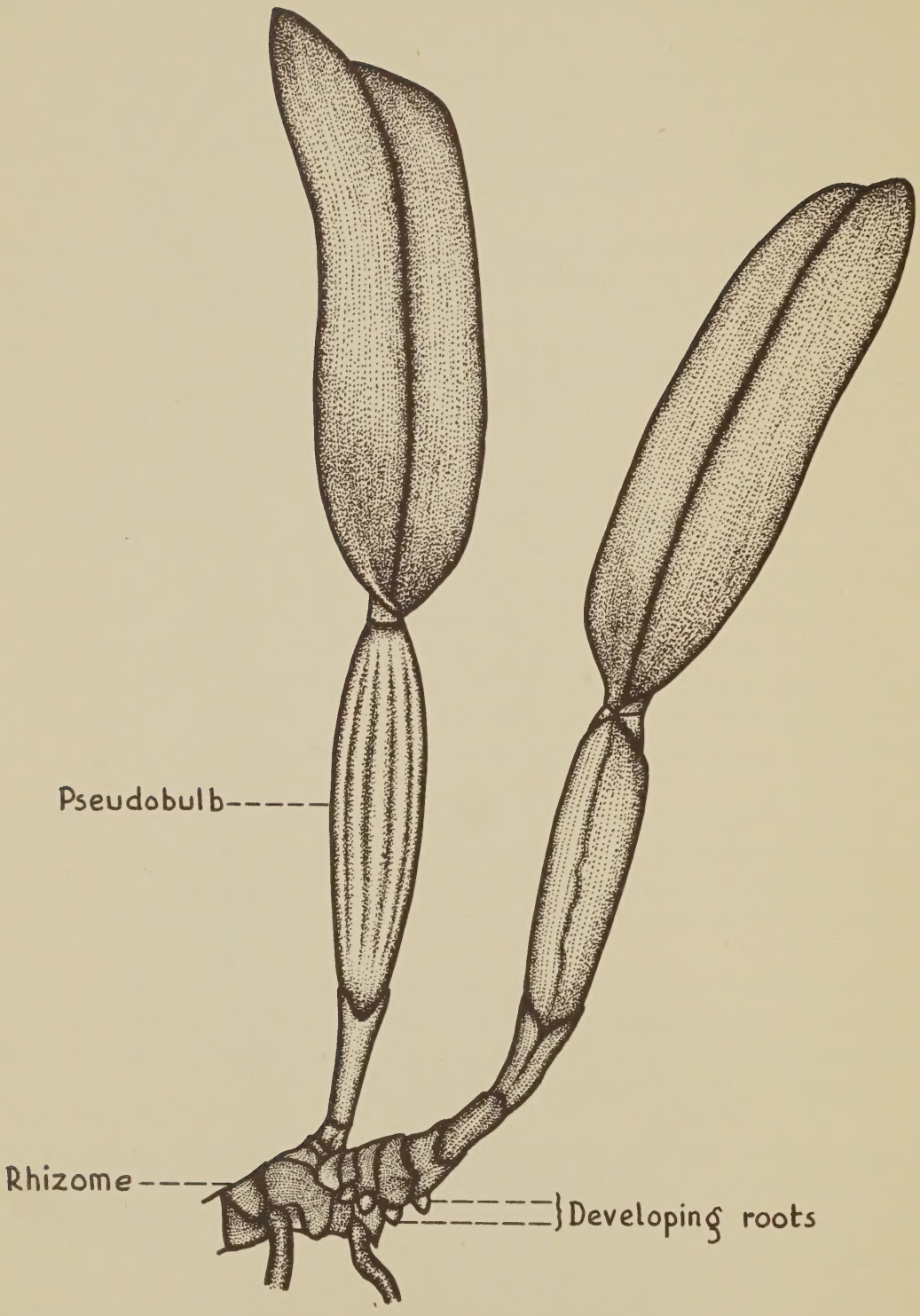

Fig. 2.

The stage of developing roots when the plant is ready for repotting.

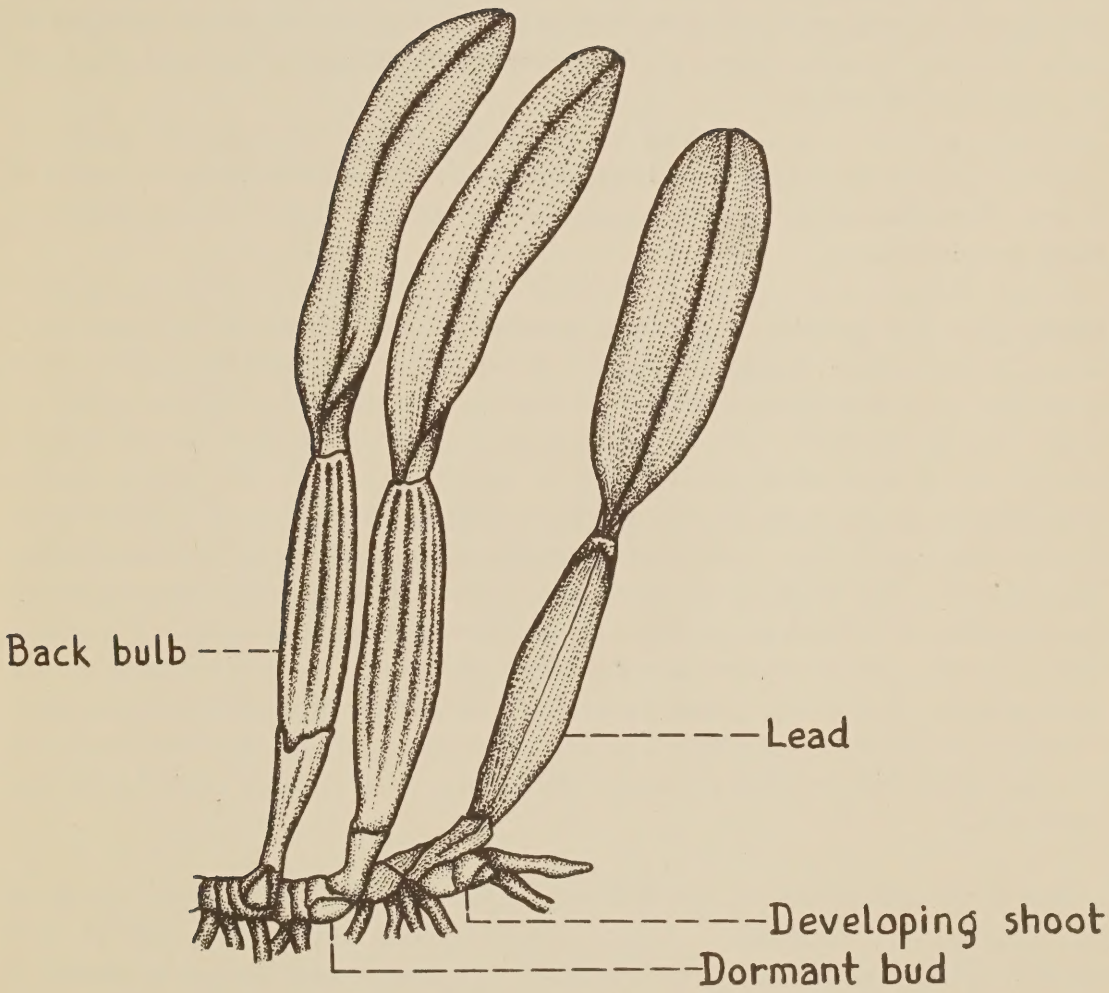

Fig. 3.

A Cattleya plant with dormant buds and a developing shoot.

respiration at that temperature. A cool house orchid may not survive at 80° F. because it may respire so fast that the process of food synthesis cannot keep up with the rate of respiration. If the night temperature is too high during periods of poor light intensity, growth becomes weakened, the flowers are small and dark-colored flowers become pale.

Generally, Cattleyas grow well with a minimum night temperature of 60° F. or within a range of 58° to 65° F. Most growers keep the day temperatures five to ten degrees above the night temperature during cloudy days and from ten to fifteen degrees higher during bright days.

Light is necessary in the manufacture of food by plants. Aside from other factors, there must be sufficient light for maximum food production.

Many orchid growers have a tendency to shade Cattleyas excessively. This practice keeps down food production and slows growth. A very low light intensity is especially detrimental at high temperatures. Such temperatures are conducive to rapid respiration and what little food is synthesized in the plant under conditions of poor light is rapidly used in respiration. Cattleyas receiving too little light have small, thin and weak pseudobulbs. The leaves are thin, flop over and sometimes do not expand fully. Increasing the light intensity not only promotes a strong, vigorous top growth but also improves root growth; food production is stimulated and more food becomes available for the proper development of both top and roots. The amount of stored food influences flower production and the size, color, and texture of the flowers.

Very high intensities, on the other hand, can reduce the amount of chlorophyll in plants. Chlorophyll is the substance that is responsible for the green coloration of plants and which enables a plant to manufacture food. With Cattleyas, too much light results in yellowing of leaves.

REGULATING THE LIGHT INTENSITY. Removing shade from the glass in winter helps the plants to utilize all available light. The shading material ordinarily used is easily washed off by rains so that by winter there is hardly any left. Scrubbing may be necessary where a more permanent type of shade has been used, as

lime and salt with oil, or white lead with gasoline. There are several products on the market for cleaning glass.

In the home the maximum amount of light can be obtained from south windows, and Cattleyas will grow well in this situation.

In most areas, shading is necessary in summer. An adjustable shading system is the best way of getting the desired light intensity. Some of the materials that may be used are Venetian blinds, roller lath shades on runners a foot above the glass, or cheesecloth with eyelets so that it may be drawn over the plants on bright days and pulled back on cloudy days.

Shading compounds as white lead and gasoline may be sprayed on the glass. However, this compound is difficult to remove. We recommend our special Rivermont shading compound.

REGULATING THE TEMPERATURE. Heating and ventilation are the most important methods of keeping the temperature within the desired limits. Oil, natural gas, or electricity are popular sources of fuel. The most economical heating can be obtained by the use of hot water.

Thermostatic controls in both heating and ventilation can be very practical. Their use has helped the grower who has to be away during most of the day. On bright days, direct solar heat and radiation cause the temperature to rise in the house. The heat should, therefore, be turned off or the ventilators opened. In winter, care should be taken to prevent cold air from rushing in. Ventilators should be opened on the leeward side.

POTTING

A Cattleya plant needs repotting when: (1) it has outgrown its pot; (2) the osmundine has decayed to a point where it starts to fall apart (indicated by its readily breaking off when a pinch is taken between the fingers.) These two conditions are ordinarily reached after two years. When a plant has to be repotted, it is best to wait until one or two roots start to develop from the base of the lead.

Select a pot large enough to permit growth of two successive

Fig. 4.

A mature Cattleya plant properly divided.

growths when the butt of the plant is placed against the edge of the pot.

REPOTTING SEEDLINGS FROM COMMUNITY POTS. For repotting these seedlings 1-3/4" and 2" pots are suitable. Run a dull knife all around the inside surface of the pot and lift out the ball of osmundine with all the seedlings. Separate the individual seedlings, carefully avoiding breaking the roots. Trim all the broken root ends and place a piece of peat on each side of the plant, with the top of the peat slightly covering the base of the plant. Next, insert the plant with the osmundine in the pot using a small potting stick, and pack more osmundine around the plant. Do not pack hard but just firm enough to hold the plant in place under all circumstances. When finished, the osmundine surface should be level and about 1/8" from the top of the pot.

REPOTTING OLDER SEEDLINGS AND FLOWERING-SIZE PLANTS The plant with the osmundine is lifted out of its pot as previously described above. Next, trim the plant, cutting all of the dead roots and dead or diseased pseudobulbs. Old, but healthy back bulbs may be removed for propagation purposes; leave at least four or five mature bulbs with the lead. Shake out or remove all of the decayed osmundine. Fill one-third of the pot with pieces of broken crock. Hold the butt of the plant against the edge of the pot and place small pieces of osmundine next to the plant in such a way that the rhizome is slightly and not completely buried in the osmundine. Work in more and more pieces of osmundine until the plant is very firmly held in place. The surface of the osmundine should be about three-fourths of an inch below the top of the pot. This makes watering easier.

CARE OF THE PLANTS AFTER REPOTTING. Water the osmundine once thoroughly and place the newly-potted plants in a shady location until the roots grow out; never allow the osmundine to dry out completely. The frequency of watering, as previously pointed out, depends on various factors. The plants may be given normal light as soon as they are established.

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